RPL55-56-57-58-59-61

Radar level transmitter K group

825B112G

Features

- **Continuous, non-contact level measurement for solids, liquids, pulps and slurries**
- **Measurement not affected by product physical variation, and very little affected by temperature changes, powders or vapours.**
- **Max measure range: from 10m to 70m**
- **Process temperature up to 180°C**
- **Process pressure up to 40bar**
- **Easy on-site configuration via menu-driven extractable matrix display**
- **Easy on-site calibration via matrix display or by HART communication (optional)**
- **2/4 wire technology**
- **Radar impulses 26GHz, K group**
- **Level measurement and echo signal curve visualisation on matrix display**
- **Storage, recognition and erasement system for false echo signals**

CE

Warranty

Products supplied by SGM LEKTRA are guaranteed for a period of 12 (twelve) months from delivery date according to the conditions specified in our sale conditions document.
SGM LEKTRA can choose to repair or replace the Product.
If the Product is repaired it will maintain the original term of guarantee, whereas if the Product is replaced it will have 12 (twelve) months of guarantee.
The warranty will be null if the Client modifies, repair or uses the Products for other purposes than the normal conditions foreseen by instructions or Contract.
In no circumstances shall SGM LEKTRA be liable for direct, indirect or consequential or other loss or damage whether caused by negligence on the part of the company or its employees or otherwise howsoever arising out of defective goods

Factory Test Certificate

In conformity to the company and check procedures I certify that the equipment:

RPL..... Production and check date: .....

Serial n. .....

is conform to the technical requirements on Technical Data and it is made in conformity to the SGM-LEKTRA procedure

Quality Control Manager : .....

1. Technical data

1.1 Choosing criteria

Version	RPL55	RPL56	RPL57	RPL58	RPL59	RPL61
Type	With threaded connection	With threaded or flanged connection and emission horn	With flanged connection	With threaded or flanged connection and emission horn	With threaded or flanged connection and emission horn	With bracket connection
						
Applications	For liquids, especially for strong erosive types, under easy process conditions	For liquids with certain temperature and/or pressure limits, under easy process conditions	For strong erosive liquids, under easy process conditions	Storage/vessel measurement for granulates and powders under hazardaous process conditions	Storage/vessel measurement for granulates, liquids and powders under hazardaous process conditions	For liquids, under easy process conditions
Max. range	10m	30m	20m	70m	15m / 30m	30m / 70m
Measurement accuracy	± 5mm	± 3mm	± 3mm	± 15mm	± 10mm	±3mm / ±10mm
Process connection	G 1" ½ A	Flanged G 1" ½ A NPT 1" ½	Flanged	Flanged (also with aiming device) G 1"" ½ A	Flanged (also with aiming device) G 1"" ½ A	Bracket
Antenna material	PVDF / PTFE	AISI316L/ PTFE	AISI316L/ PTFE	AISI316L/ PTFE	AISI316L/ PTFE	Polyamide (PA66)
Process temperature	- 40 ÷ + 130 °C	- 40 ÷ + 130 °C - 60 ÷ + 250 °C - 60 ÷ + 400 °C	- 40 ÷ + 150 °C	- 40 ÷ + 130 °C - 60 ÷ + 250 °C	- 40 ÷ + 130 °C - 60 ÷ + 250 °C	-40 ÷ 100 °C
Process pressure	- 1 ÷ 3bar	- 1 ÷ 40bar - 1 ÷ 400bar	- 1 ÷ 5bar	- 1 ÷ 40bar	- 1 ÷ 40bar	Atmospheric
Frequency range	26 GHz	26 GHz	26 GHz	26 GHz	26 GHz	26 GHz
Power supply	24Vdc/230Vac	24Vdc/230Vac	24Vdc/230Vac	24Vdc/230Vac	24Vdc/230Vac	24Vdc/6÷24Vdc
Output signal	2/4 wires 4÷20mA, HART	2/4 wires 4÷20mA, HART	2/4 wires 4÷20mA, HART	2/4 wires 4÷20mA, HART	2/4 wires 4÷20mA, HART	2 wires 4÷20mA HART
Housing	Aluminium	Aluminium	Aluminium	Aluminium	Aluminium	Polycarbonate
Protection degree	IP67	IP67	IP67	IP67	IP67	IP68 / IP66

1.2 Power supply

2-wire version:

- input voltage: 16÷26Vdc
- intrinsically safe input voltage: 21.6÷26.4Vdc
- consumption: max. 22.5mA
- max ripple: <100Hz, Uss>1V; 100Hz÷100KHz, Uss<10mV

4-wire version:

- input voltage: 24Vdc ±10%; 230Vac ±10%
- intrinsically safe input voltage: 24Vdc ±10%; 230Vac ±10%
- consumption: max. 1VA, 1W

MODBUS version (RPL61 only):

- input voltage: 6÷24Vdc

1.3 Output

output signal: 4÷20mA / HART

resolution: 1,6microA

fault fixed signal: 20.5mA; 22mA; 3.8mA

load:

- 2-wire version: see fig.1
- 4-wire version: max. 500ohm

integration time: 0÷40s, programmable

2-wire Load Resistance Diagram

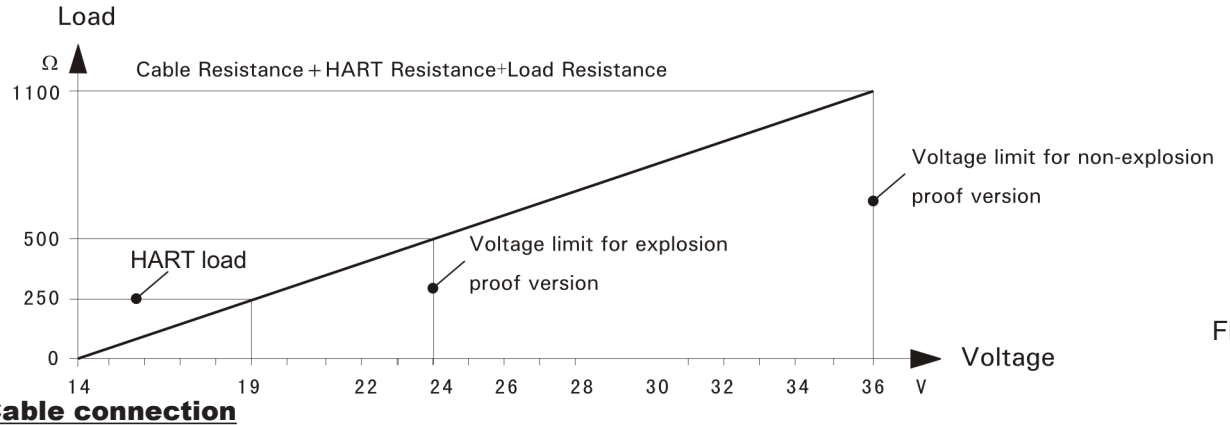


Fig.1

1.4 Cable connection

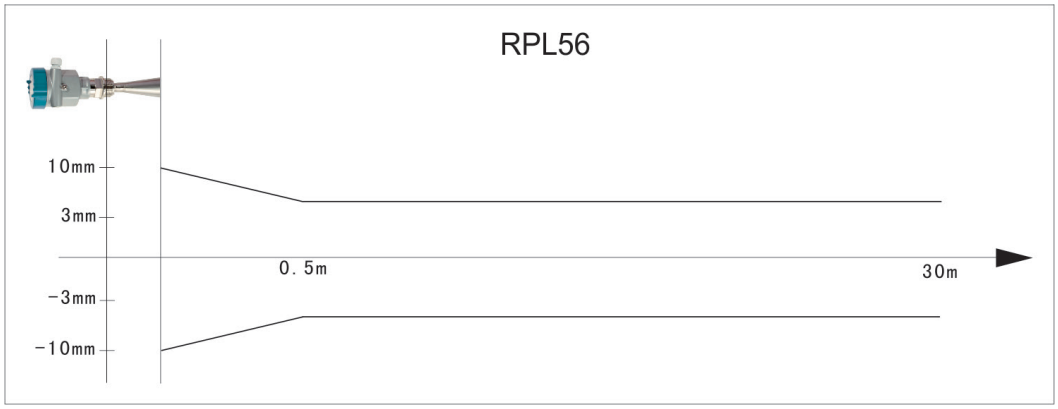
cable input: 2 x M20x1.5

connecting terminals: max. wire section 2.5mm^2

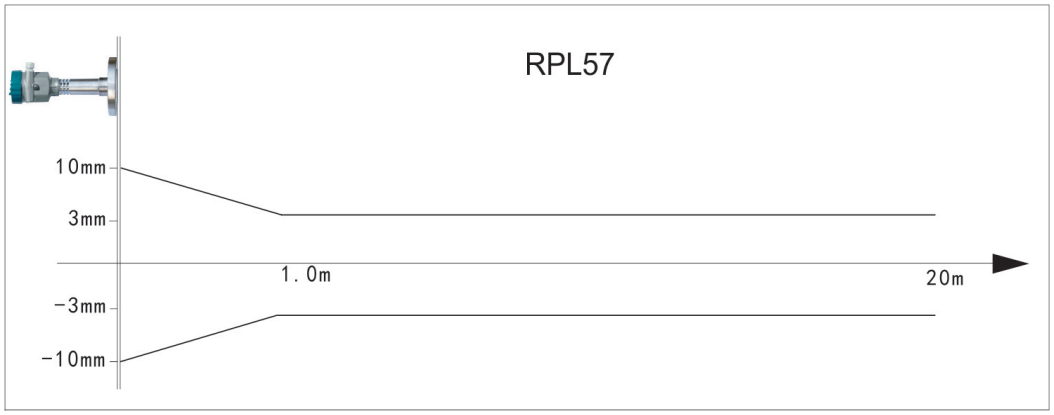
1.5 Accuracy

Beam angle Vers. RPL55: 22°

Antenna diameter	Beam angle Vers. RPL56:
Ø 48	18°
Ø 78	12°
Ø 98	8°



Antenna diameter	Beam angle Vers. RPL57:
DN50 Flange	18°
DN80 Flange	12°
DN100 Flange	8°



Antenna diameter	Beam angle Vers. RPL58:
Ø 48	18°
Ø 78	12°
Ø 98	8°
Ø 123	6°
Ø 198	5°
Ø 246	4°

Antenna diameter	Beam angle Vers. RPL59:
Ø 48	18°
Ø 78	12°
Ø 98	8°
Ø 123	6°
Ø 198	5°
Ø 246	4°

Beam angle Vers. RPL61: 8°

2. Mounting requirements

The **RPL** system measures the distance between the reference plane (lower edge of the flange) and the product surface. For blind zone is defined as the minimum distance between the reference point of the measurement (installation flange) and the maximum level

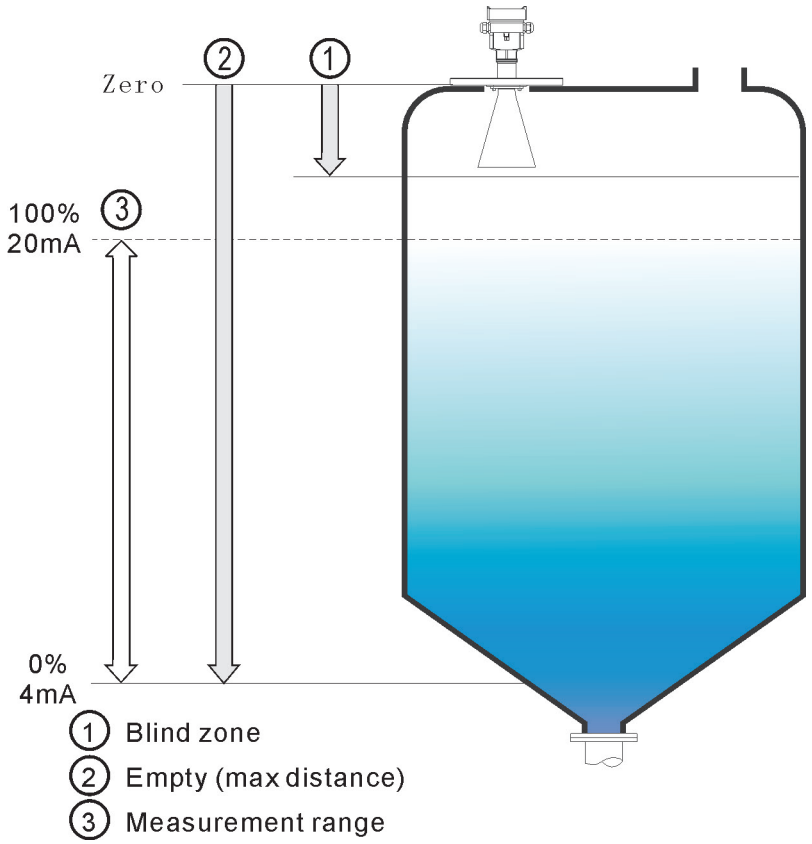


Fig.2

WARNING - *To avoid damage to electronic equipment inside, mechanically remove the RPL transmitters before doing any arc welding in their vicinity.*

2.1 Mounting position

The minimum distance between the instrument and the vessel wall is 500mm (Fig.3/4).

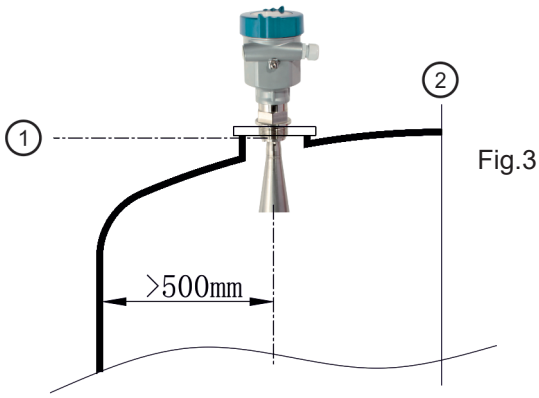


Fig.3

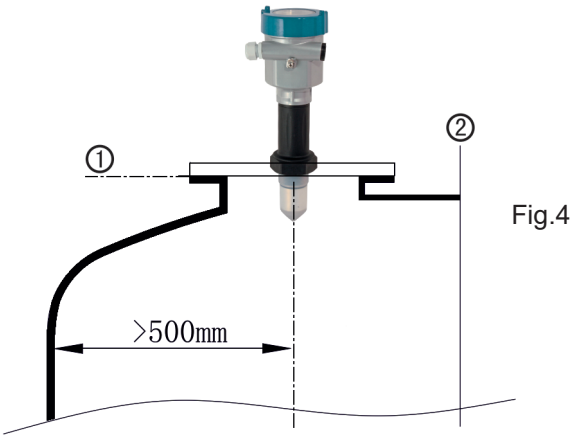


Fig.4

1 Reference plane
2 Center of vessel or symmetrical axis

The best mounting position for a conical vessel with a flat top is in the middle of the top, as shown in fig.5.
In a tank with flat bottom and curved top, to prevent multiple reflections do not install the sensor in the top center, fig.6; shown in figure 7 the optimum installation location.

Fig.5

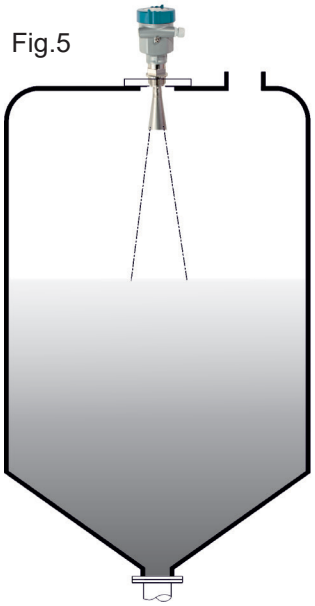


Fig.6

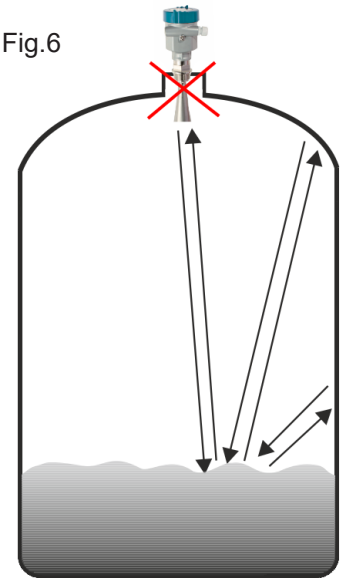
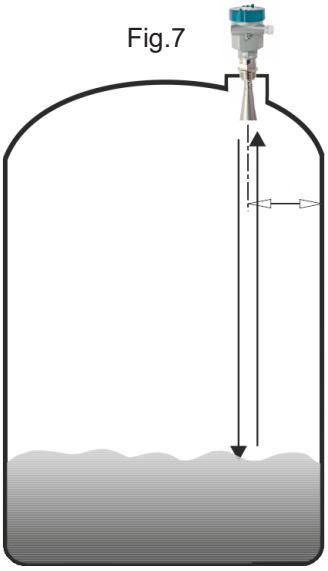


Fig.7



If possible, try to avoid stand-pipe versions or at least to reduce its dimensions.
The transducers end must protrude at least for 10mm out of the stand-pipe, fig.8. We recommend RPL56 version in presence of long stand-pipe mounted on small pipes or in applications with low dielectric constant.
In presence of products with strong reflective properties and big stand-pipe diameter, you can mount instruments on stand-pipe higher than the antenna length. The recommended values for stand-pipe heights are shown in the illustration below (Fig.9 and 9/a). The stand-pipe end should be smooth and burr-free, if possible also rounded. Moreover, false echo storage must be carried out afterwards

Fig.8

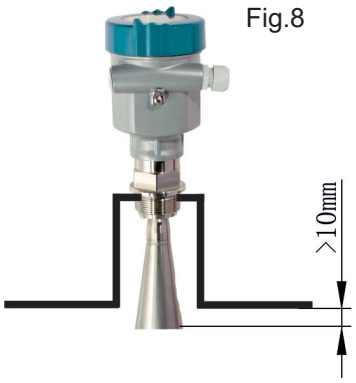
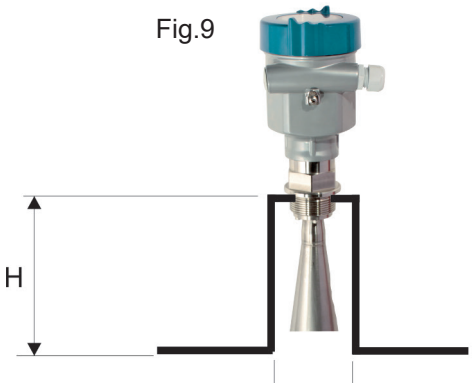
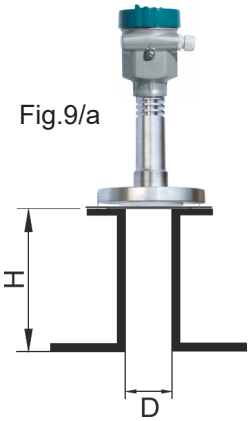


Fig.9



D	H
1 ½”	200mm
50mm / 2”	250mm
80mm / 3”	300mm
100mm / 4”	500mm
150mm / 6”	800mm

Fig.9/a



D	H
50mm / 2”	100mm
80mm / 3”	150mm
100mm / 4”	250mm

The cable must be positioned as shown in fig.10, in order to avoid possible infiltration caused by humidity or vapours.

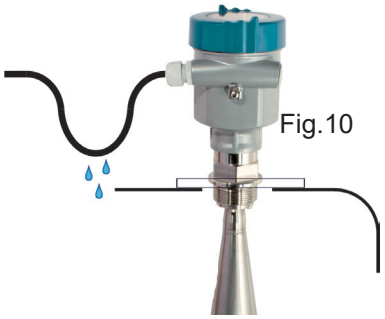


Fig.10

1) Wrong : the microwave beams must not intersect the filling stream (see fig.11/1)
2) Correct: in case of outdoor mounting, use a protection cover to protect the transmitter from direct sun or rain (see fig.11/2)
3) Wrong : in silos with granules the probe must not be vertically oriented (see fig.11/3)
4) Correct: in silos with granules the probe should preferably be mounted at the center (see Fig.11/4)
5) Correct: in silos with granules the probe must be oriented towards the product discharge (see Fig.11/5)
6) Correct: in silos with granules the probe must be installed in half radius (see Fig.11/6)

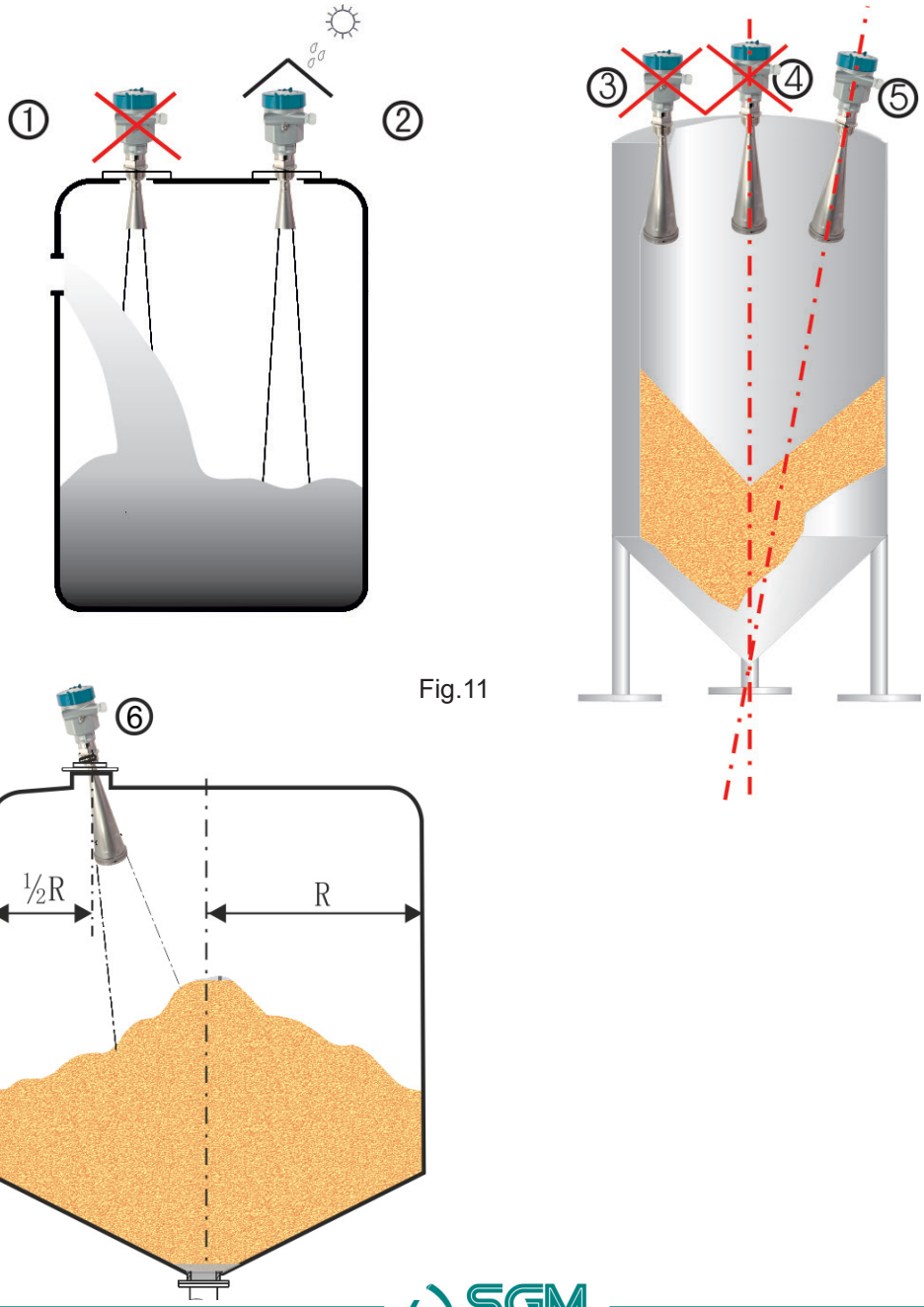


Fig.11

In case of tanks equipped with agitators (Fig.12/A), it is necessary to map and memorize the false echo signals created by the agitators blades. This procedure allows **RPL** transmitter to recognize a false echo and to transmit the correct signal. If there are barriers in the tank (Fig.12/B), requires the installation of a baffle-board (Fig.12/C), so the barriers false echo signal will be attenuated and you can mask it with the “False Echo” function.

Fig.12/A

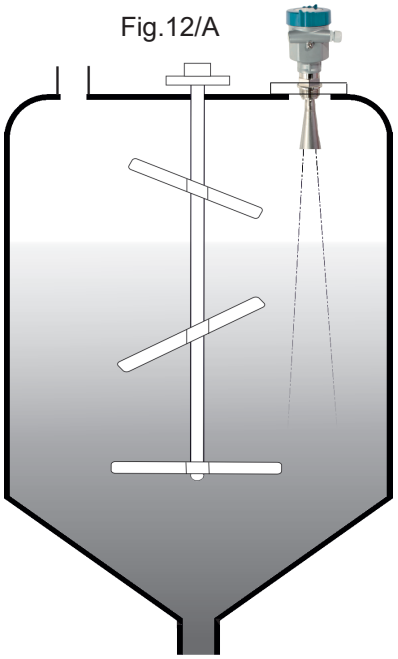


Fig.12/B

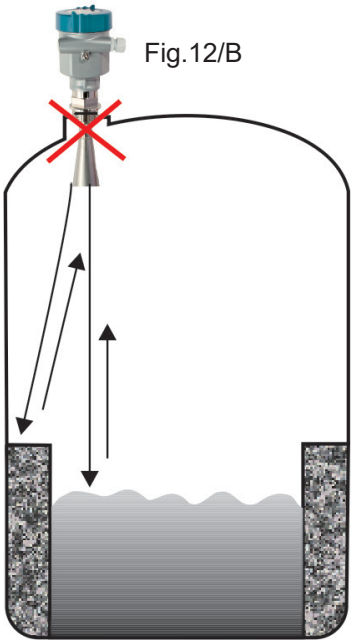
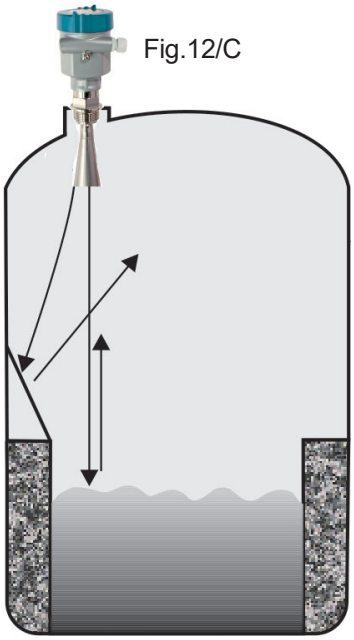


Fig.12/C



You are advised to opt for installation with standpipe (or bypass tube) to avoid the influence on measurement caused by barriers inside tanks or foam generation.
It is advised to install antenna inside of the standpipe to avoid the error caused by foam.
The stilling or by-pass pipe must reach the minimum level and the minimum inner diameter of standpipe should be 50mm (Fig.13).
Avoid large cracks or welding seam when connecting standpipe, in this case use the false echo function.

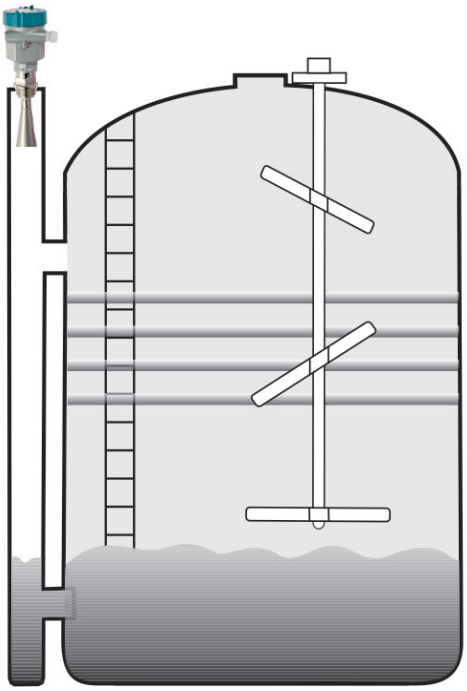
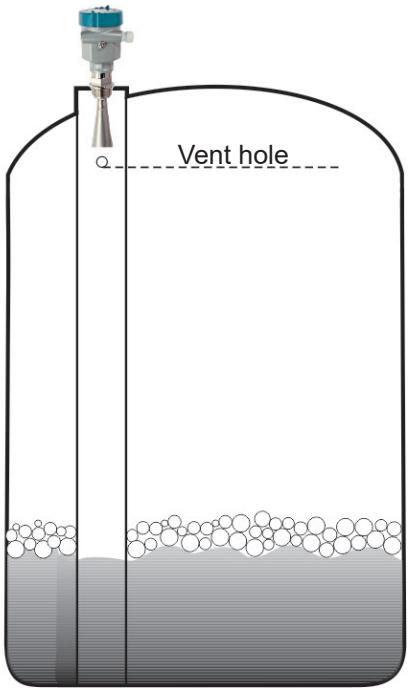


Fig.13



3. Electrical connections

3.1 Standard conditions

The electric supply voltage can be different according to the transmitter model. Always check the correct value indicated on the transmitter label.

It is necessary to observe installation codes and safety operations for the site and the plant conditions.

3.2 Power supply

3.2.1 4÷20mA / HART, 2-wire

The same cable is used for both electrical supply and for 4÷20mA signal (fig.14). The correct values of the electrical supply are indicated on the product technical data sheet.

3.2.2 4÷20mA / HART, 4-wire

2 different cables are used for electrical supply and for 4÷20mA signal (fig.15).

3.3 Connecting cables

Use a 6÷11mm diameter cable to ensure the tightness on cable glands. Use shielded cables in order to avoid transient current on the shield.

3.3.1 4÷20mA / HART

For 2-wire model use a single cable (fig.14). For 4-wire model use two cables (fig.15).

3.4 Earthing of cable shield

The cable shield must be earthed at both ends. Insert a ceramic capacitor, 1nF 1500V type, in order to avoid transient currents on the shield.

3.5 Wiring diagrams

See the different versions in Fig.14,15,16

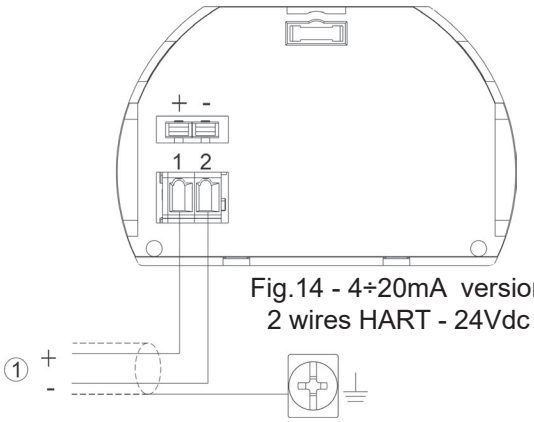


Fig.14 - 4÷20mA version
2 wires HART - 24Vdc

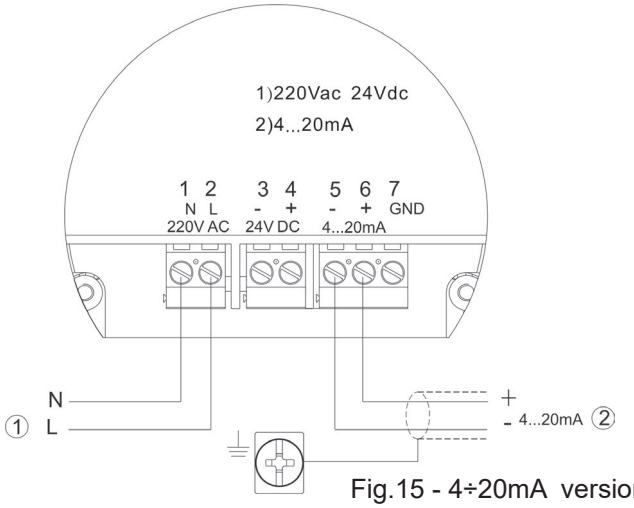


Fig.15 - 4÷20mA version
4 wires - 230Vac or 24Vdc

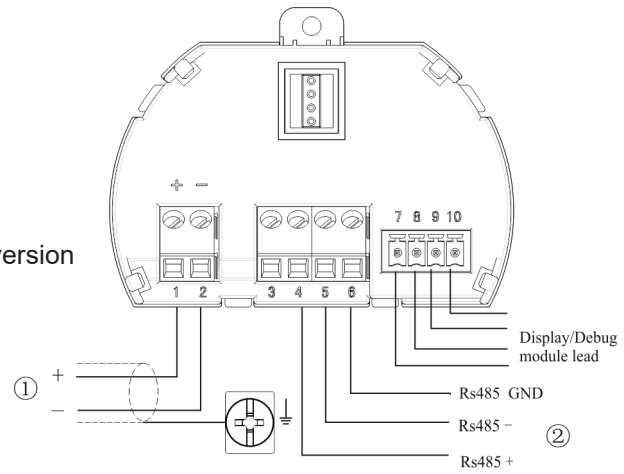


Fig.16 - MODBUS version
6÷24Vdc

4. Configuration

4.1 Setting modalities

The **RPL** radar level transmitters have 3 configuration and setting modalities:

- by **VL602** programmimg display
- by **SGMware** communication software
- by portable HART progammer

4.3 SGMware

4.3.1 Connection by HART line (fig.20)

1) RS232 connector
2) RPL5X with HART communication protocol
3) HART adapter to connect to COMWAY converter
4) 250ohm resistance
5) COMWAY converter

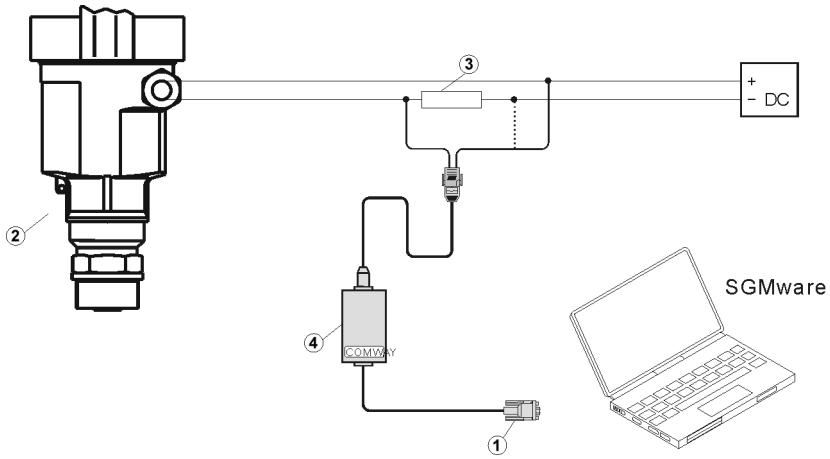


Fig.20

4.3.3 Connessione by HART programmer (fig.21)

1) HART programmer
2) RPL5X with HART communication protocol
3) 250ohm resistance

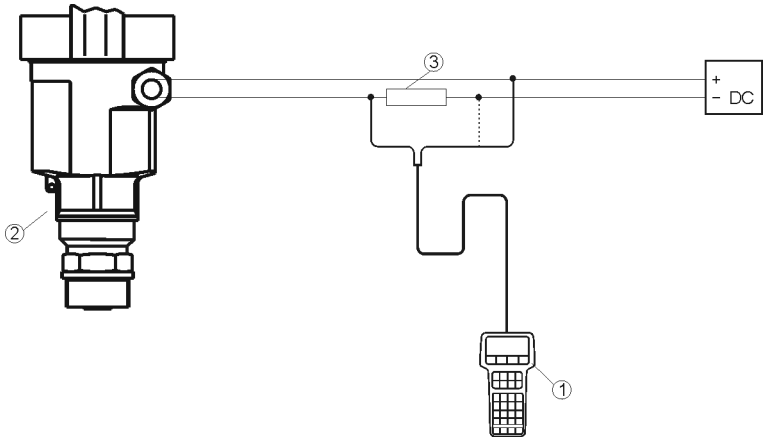


Fig.21

5. PROGRAMMING

5.1 Programming display

The **VL602** programming display (fig.23) has a large matrix LCD (fig.23, 1), and can be easily connected to the unit (with a clockwise rotation) by sliding contacts. It can be mounted and removed while the instrument is working.. The multi-tongue programming guide allows an easy and fast start up through the keyboard (fig.23, 2). The display also shows the distance and the instantaneous level during the operating conditions, through its transparent cover.

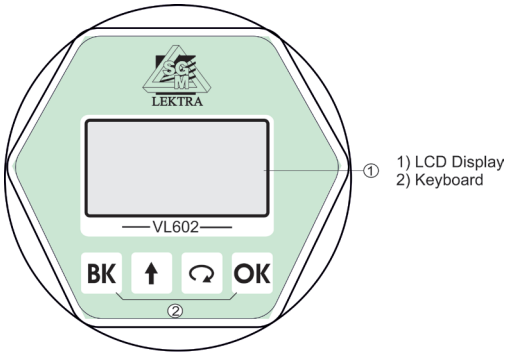


Fig.23

OK - Programmation access
- Option confirmation
- Parameters value cofirmation

- Value selection
- Scroll parameters

- Parameters value modification

BK - Exit programmation
- Back to previous menu
- **"RUN"** and **"ECHO WAVE"** access

5.2 Description

The Menu Structure is shown in the next paragraphs.
When the arrow ► is positioned on the right side of the writing, press OK to choose the parameter setting menu, or press to select the next parameter. When the arrow ► is positioned on the left side of the writing, press to select the next menu and press OK to confirm. To go back to previous menu press BK.

5.3 Programming menu

5.3.1 Basic settings

In this menu is possible to set the basic adjustments of the sensor.

5.3.2 Display

In this menu you can setup the sensor display and adjust the B/W contrast for LCD.

5.3.3 Diagnostic

In this menu you can check and test the sensor. You can view the measurement peak values, the measurement status and the Echo-curve.

5.3.4 Service

In this menu you can set the falso Echo-curve, current output, language and HART mode.

5.3.5 Info

In this menu you can see the sensor information, including type, serial number, date of manufacture and software version.

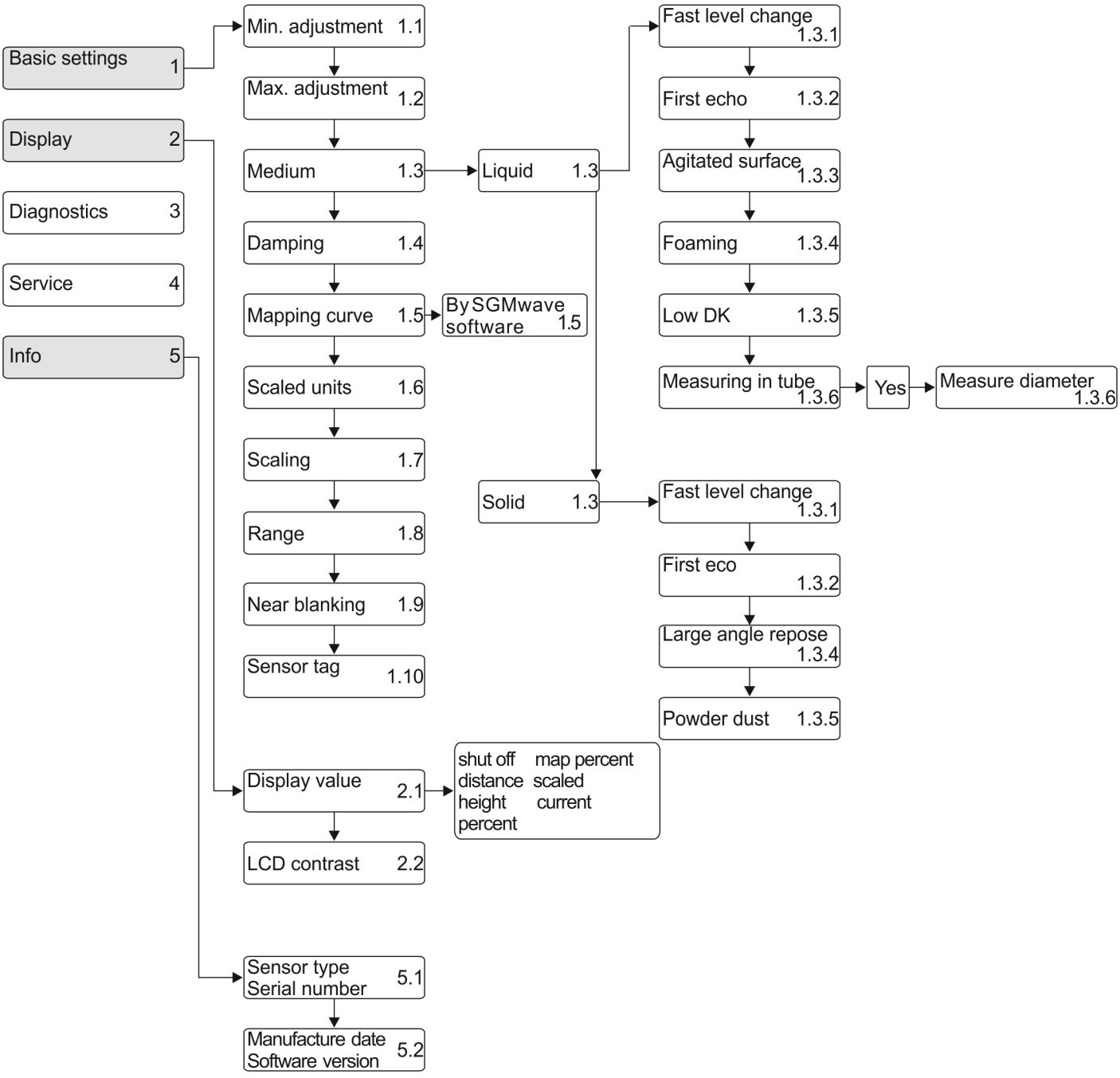
5.4 Program mode

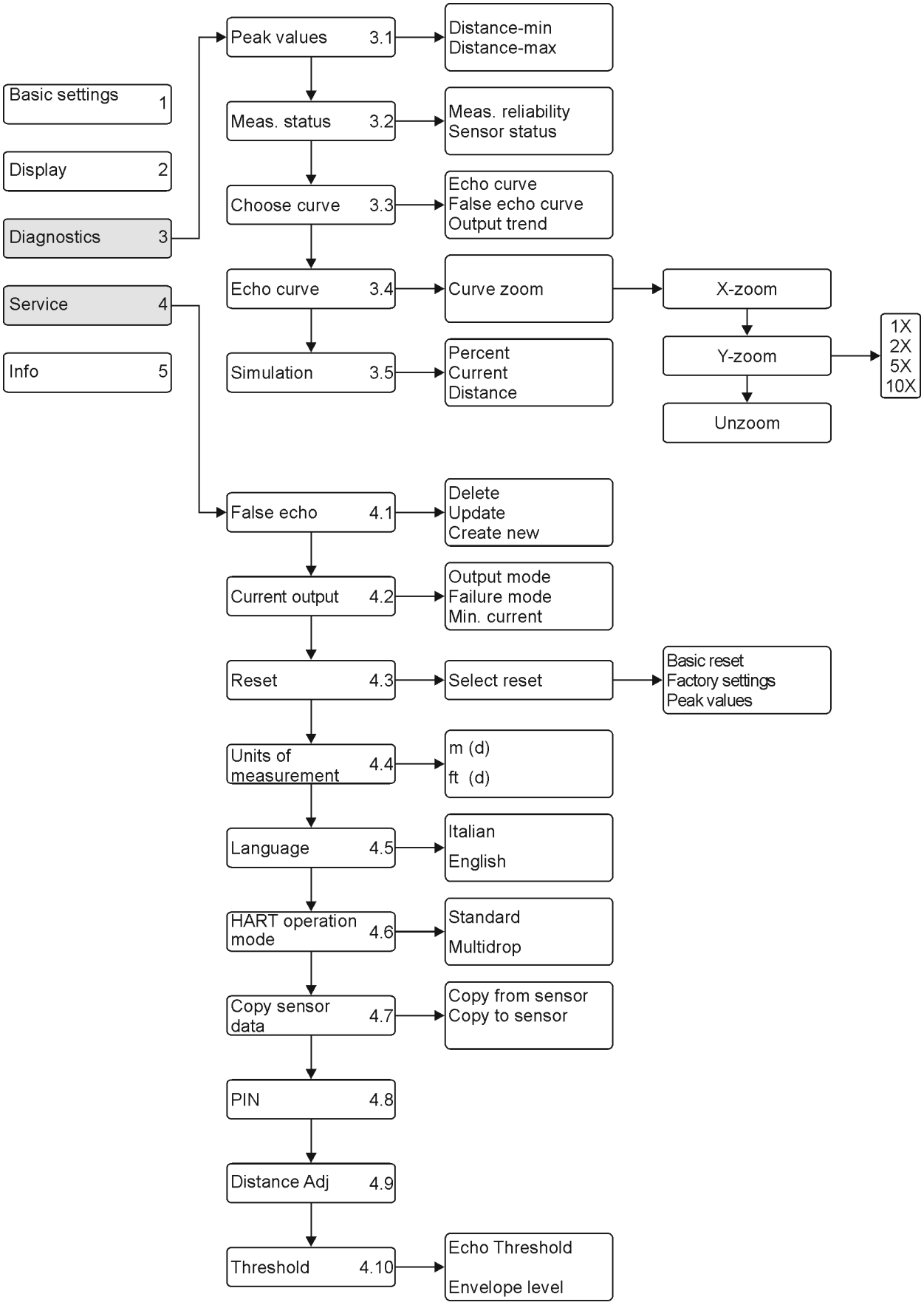
From "RUN" mode press OK to enter "PROGRAM" mode. Press BK to quit.

5.5 Parameter setting and changing

On entering Parameter Editing, the first digit of the edited parameter will be displayed in black background .
Press to modify the digit and press to edit the next digit.
At the end of the operations, press OK to confirm and to store the modifications
To select a parameter during the setting, press and confirm your choice with OK .

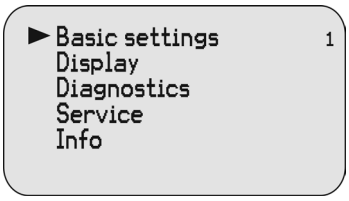
6. MENU STRUCTURE




Basic settings 1
Display 2
Diagnostics 3
Service 4
Info 5
Peak values 3.1
Distance-min
Distance-max
Meas. status 3.2
Meas. reliability
Sensor status
Choose curve 3.3
Echo curve
False echo curve
Output trend
Echo curve 3.4
Curve zoom
X-zoom
Y-zoom
Unzoom
1X
2X
5X
10X
Simulation 3.5
Percent
Current
Distance
False echo 4.1
Delete
Update
Create new
Current output 4.2
Output mode
Failure mode
Min. current
Reset 4.3
Select reset
Basic reset
Factory settings
Peak values
Units of measurement 4.4
m (d)
ft (d)
Language 4.5
Italian
English
HART operation mode 4.6
Standard
Multidrop
Copy sensor data 4.7
Copy from sensor
Copy to sensor
PIN 4.8
Distance Adj 4.9
Threshold 4.10
Echo Threshold
Envelope level

7. BASIC SETTINGS (1)

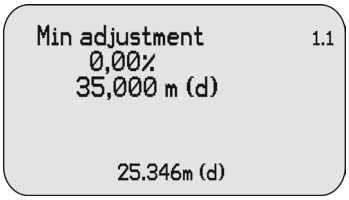
From "**RUN**" mode press OK to enter the configuration menu. Press ↻ to select and OK to confirm. The menu item number is always displayed on the top right corner. By selecting and confirming "**Basic settings**" in menu **1**, the display will show in sequence:



↻ Select menu
OK Confirm
Note-The menu item number is displayed on the top right corner.

7.1 Min. adjustment (1.1)

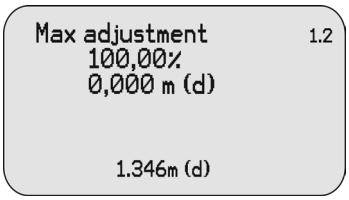
Press OK to modify the percentage value (see par. **2.4).**
Press OK again to confirm and to edit the corresponding distance value. After the setup press OK to confirm.
Press ↻ to enter menu **1.2** .
Note - The lower value **(d)** shows the measured instantaneous distance.



OK Enter editing menu
↻ Select the value
↑ Modify the value
OK Confirm
↻ Go to menu **1.2**

7.2 Max adjustment (1.2)

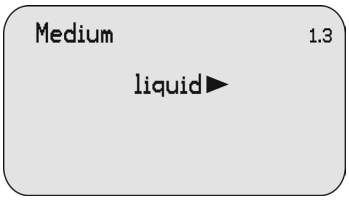
Press OK to modify the percentage value (see par. **2.4).**
Press OK again to confirm and to edit the corresponding distance value. After the setup press OK to confirm.
Press ↻ to enter menu **1.3**
Note - The lower value **(d)** shows the measured istantaneous distance.



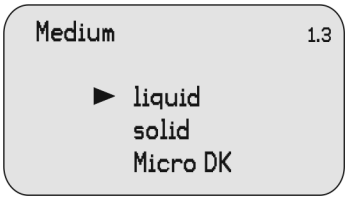
OK Enter editing menu
↻ Select the value
↑ Modify the value
OK Confirm
↻ Go to menu **1.3**

7.3 Medium (1.3)

Each medium has different reflective properties.
In this menu is possible to choose between liquid or solid medium.
Press OK to enter medium selection menu.
Press ↻ to select the medium and OK to confirm and to enter submenu **1.3.1**



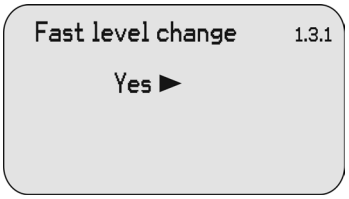
OK Enter editing menu
↻ Go to menu **1.4**
↻ Select parameter
OK Confirm and enter submenu **1.3.1**



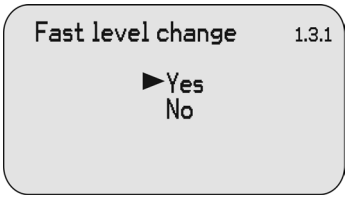
OK Select the medium type
↻ Confirm the selection

7.3.1 Fast level change (1.4)

Transient or foreign elements could temporary cause unexpected rushes in measured values. In these events set the parameter on **"No"**in order to filter the rushes. Default setting is **"Yes"**.
Press OK to enter parameter modification, press ↻ to enter the next menu **1.5**
With ↻ you can select the parameter setting, with OK you can confirm your selection and go back to previous submenu.



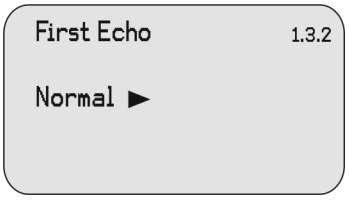
OK Enter editing menu
↻ Go to submenu **1.5**



↻ Select parameter
OK Confirm and go back to previous submenu

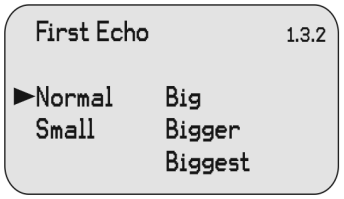
7.3.2 First echo (1.3.2)

This parameter sets the first valid echo signal acceptance .
Press OK to enter parameter modification, press ↻ to enter the next submenu **1.3.3** (par.3.3.c).



OK Enter editing menu
↻ Go to next submenu **1.3.3**

With ↻ you select the parameter setting, with OK you confirm your selection and go back to previous submenu:
- Normal; automatic
- Small; decrease first echo by 10dB
- Big; increase first echo by 10dB
- Bigger; decrease first echo by 40dB
- Biggest; increase first echo by 40dB

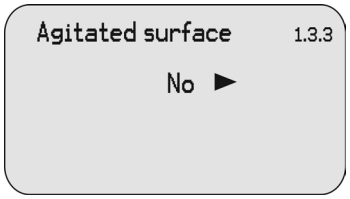


☞ ↻ Select parameter
☞ OK Confirm and go back to previous submenu

7.3.3 Agitated surface (1.3.3)
Large angle repose (1.3.3)

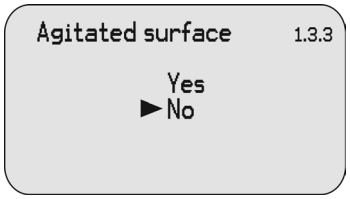
This submenu is related to the previous selection in menu **1.3**: by selecting "**Liquid**" in menu **1.3**, the display will now show "**Agitated surface**"; In both cases the default setting is "**No**".

Press OK to enter parameter modification, press ↻ to enter the next submenu.



☞ OK Enter editing menu
☞ ↻ Go to next submenu **1.3.4**

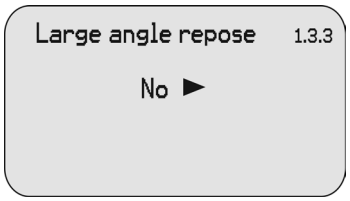
Note - This window is diplayed only in case of selected option "**Liquid**"in menu 1.3



☞ ↻ Select parameter
☞ OK Confirm and go back to previous submenu

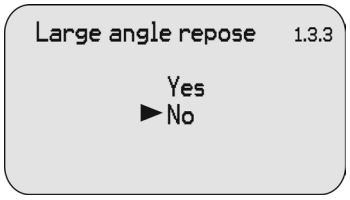
by selecting "**Solid**" in menu **1.3**, the display will now show "**Large angle repose**".

Press OK to enter parameter modification, press ↻ to enter the next submenu.



☞ OK Enter editing menu
☞ ↻ Go to next submenu **1.3.4**

Note - This window is diplayed only in case of selected option "**Solid**"in menu 1.3

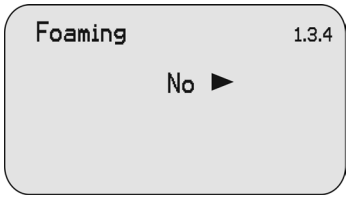


☞ ↻ Select parameter
☞ OK Confirm and go to next submenu

7.3.4 Foaming (1.3.4)
Powder dust (1.3.4)

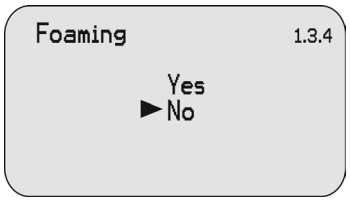
This submenu is related to the previous selection in menu **1.3**: by selecting "**Liquid**" in menu **1.3**, the display will now show "**Foamimg**" In both cases the default setting is "**No**".

Press OK to enter editing menu and press ↻ to select the option. Then press OK again to confirm and to go



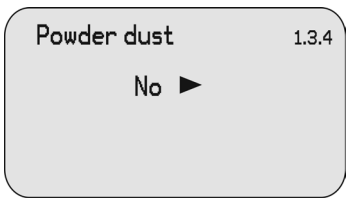
☞ OK Enter editing menu
☞ ↻ Go to next submenu **1.3.5**

Note -This window is displayed in case of selected option **"Liquid"** in menu 1.3



☞ ↻ Select parameter
☞ OK Confirm and go to next submenu

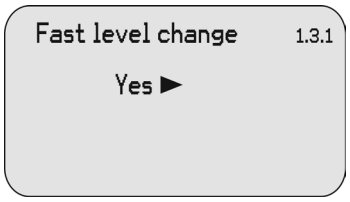
by selecting "**Solid**" in menu **1.3**, the display will now show "**Powder dust**".



☞ OK Enter editing menu
☞ ↻ Go to next submenu **1.3.5**

Note -This window is displayed in case of selected option **"Solid"**in menu 1.3

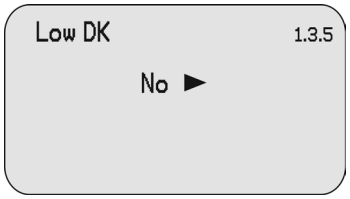
Press OK to enter editing menu and press ↻ to select the option. Then press OK again to confirm and to go



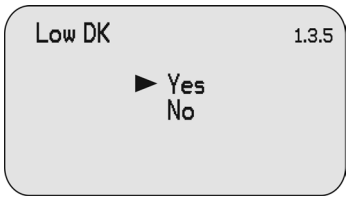
OK Enter editing menu
↻ Go to next submenu

7.3.5 Low DK (1.3.5)

The Dielectric Constant is very important in order to obtain a correct measurement. In case of products with low dielectric costant (absestos or non-conductive liquids), set the parameter on "**Yes**".
The default setting is "**No**".
Press OK to enter parameter modification and press ↻ to select the parameter.
Press OK again to confirm and to go back to previous submenu.



OK Enter editing menu
↻ Go to next submenu
Note-This window is displayed only in case of selected option "**Liquid**"in menu 1.3



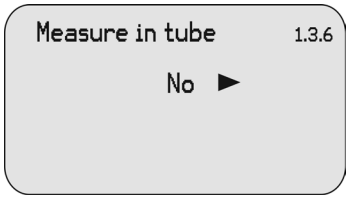
↻ Select parameter
OK Confirm

Selecting "Yes" must enter the height of empty vessel.
Press again OK and enter the Empty Span.
Press OK to confirm and ↻ to go back to previous submenu.

OK Enter editing menu
↻ Select the value
↑ Modify the value
OK Confirm
↻ Go to the next menu

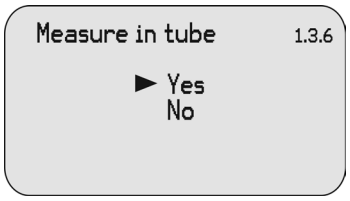
7.3.6 Measure in tube (1.3.6)

This window is displayed only by selecting "**Liquid**" in menu **1.3**.
If the transmitter is installed into a calm or by pass pipe it is necessary to set **"Yes"**.
The default setting is "**No**".



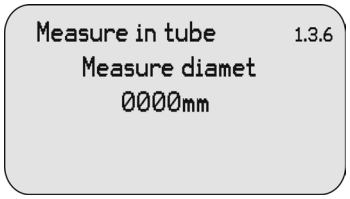
OK Enter editing menu
↻ Go to next submenu **1.3.1**
Note - This window is displayed only in case of selected option "**Liquid**"in menu 1.3

Press OK to enter parameter modification and press ↻ to make the selection. Confirm with OK and go next submemu "**Measure diameter**".



↻ Select parameter
OK Confirm and go to next submenu

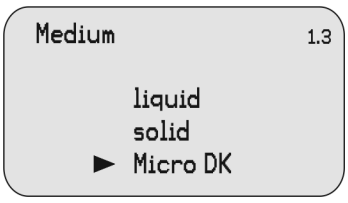
Press again OK and enter the diameter value, as specified in par. **2.4.** Press OK to confirm and ↻ to go back to previous submenu.



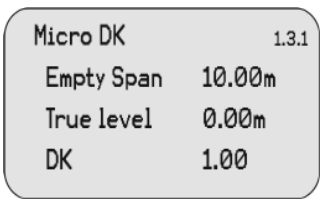
OK Enter editing menu
↻ Select the value
↑ Modify the value
OK Confirm

7.3.7 Micro DK (1.3.1)

Normally when electronic constant is smaller than 1.4, the direct echo from the medium is low and hard to detect. However by measuring the echo reflected from the base of the vessel, the height of the medium can be measured. Two parameters are needed to be entered here.
1. Height of empty vessel. 2. True medium height or medium electronic constant, these two parameters are related, entering either one is accepted. The precision of parameters will affect the precision of the measurement.



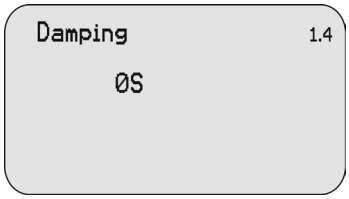
OK Enter editing menu
↻ Go to next submenu



OK Enter editing menu
↻ Select the value
↑

7.4 Damping (1.4)

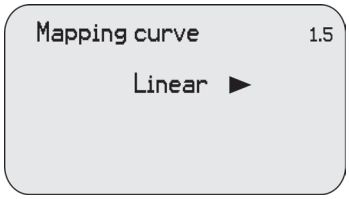
Press OK to enter parameter modification and set the value (in seconds) and confirm with OK .
Press ↻ to go to next menu **1.5**.



- OK Enter editing menu
- ↻ Select value
- ↑ Modify the value
- OK Confirm
- ↻ Go to next menu **1.5**

7.5 Mapping curve (1.5)

The relationship between the measured value and the output signal 4÷20mA can be linear or non linear. In this menu you can set the output signal 4÷20mA: "**linear**" or "***non- linear***". The setting of "***non- linear***" mode must be done with **SGMware** software through PC.
Press OK to select the 4÷20mA output mode, press ↻ to enter the next menu.

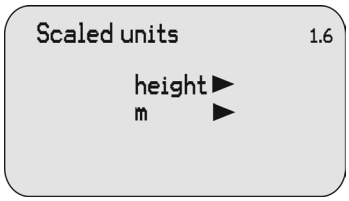


- OK Enter editing menu
- ↻ Go to next menu **1.6**

Note -The setting of a "non-linear" mapping curve must be done with **SGMsoftware** through PC

7.6 Scaled units (1.6)

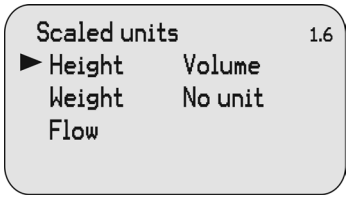
Press OK to enter parameter modification.
Press ↻ to go to next menu **1.7**.



- OK Enter editing menu
- ↻ Go to next menu **1.7**

The selectable options are:
- **Height**; m, ft, in, cm, mm
- **Massa**; Kg, t, lb
- **Flow**; m^3/s, m^3/h, ft^3/s, ft^3/m, gal/s, gal/min, gal/h, l/s, l/min, l/h
- **Volume**; m^3, l, hl, ft^3, in^3

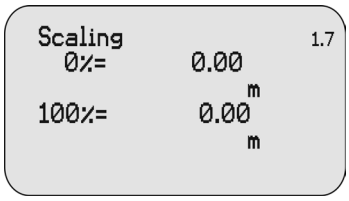
Press ↻ to make the selection and press OK to confirm



- ↻ Select the parameter
- OK Confirm and enter to relevant submenu

7.7 Scaling (1.7)

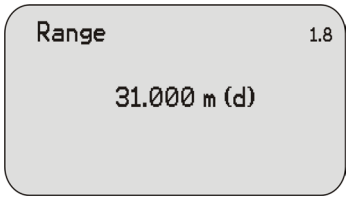
Press OK to modify the 0% value, press ↻ to enter the next menu. Set the value and confirm with OK .
Press OK again to modify the 100% value. Set the value and confirm. Press ↻ to enter the next menu.



- OK Enter editing menu
- ↻ Select the value
- ↑ Modify the value
- OK Confirm
- ↻ Go to next menu **1.8**

7.8 Range (1.8)

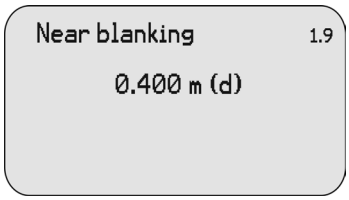
Press OK to modify the value expressed in meters, press ↻ to enter the next menu **1.9**
Set the value and confirm with OK .
Press ↻ to enter the next menu **1.9**.



- OK Enter editing menu
- ↻ Select the value
- ↑ Modify the value
- OK Confirm
- ↻ Go to next menu **1.9**

7.9 Near blanking (1.9)

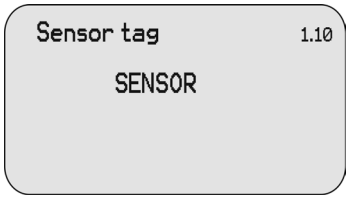
Press OK to modify the value expressed in meters, press ↻ to enter the next menu **1.10**
Set the value and confirm with OK .
Press ↻ to enter the next menu **1.9**



- OK Enter editing menu
- ↻ Select the value
- ↑ Modify the value
- OK Confirm
- ↻ Go to next menu **1.9**

7.10 Sensor tag (1.10)

Press OK to modify the parameter, press ↻ to enter the starting menu **1.1**.
Set the value, as specified in par 2.4, and confirm with OK .
Press ↻ to enter the starting menu **1.1.**

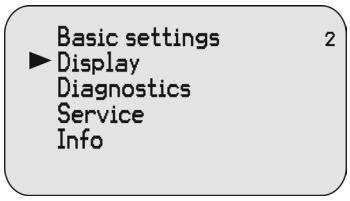


- OK Enter editing menu
- ↻ Select the value
- ↑ Modify the value
- OK Confirm
- ↻ Go back to starting menu **1.1**

8. DISPLAY (2)

From "**RUN**" mode press OK to enter the configuration menu: the following menu will be displayed (**1**). Press OK to select the item and press ↻ to confirm. The menu item number is always displayed on the top right corner.

By selecting and confirming **"Display**" in menu **2**, the display will show in sequence:

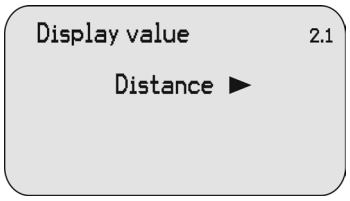


↻ Select menu
OK Confirm

Note-The menu item number is displayed on the top right corner.

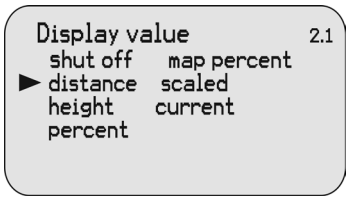
8.1 Display value (2.1)

Press to OK to enter parameter modification and press ↻ to enter next menu **2.2**.



OK Enter editing menu
↻ Go to next menu **2.2**

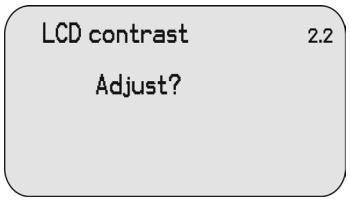
Select with ↻ the measured value you want to be displayed and press OK to confirm and to go back to previous menu.



↻ Select the parameter
OK Confirm and go back to menu **2.1**

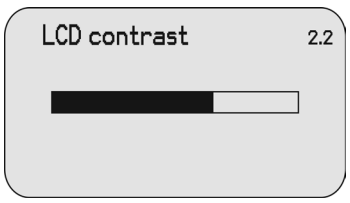
8.2 LCD contrast (2.2)

Press OK to enter parameter modification and press ↻ to enter next menu **2.1**.



OK Enter editing menu
↻ Go to menu **2.1**

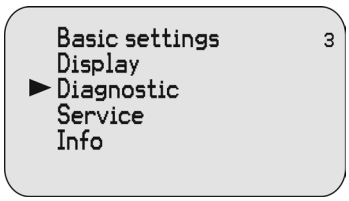
Press ↑ to increase the contrast and press ↻ to decrease. Press OK to confirm and to go back to previous menu.



↻ Decrease the contrast
↑ Increase the contrast
OK Confirm and go back to menu **2.2**

9. Diagnostic (3)

From "**RUN**" mode press OK to enter the configuration menu: the following menu will be displayed (**1**).
Press ↻ to select the item and press OK to confirm.
The menu item number is always displayed on the top right corner.
By selecting and confirming **"Diagnostic**" in menu **3**, the display will show in sequence:

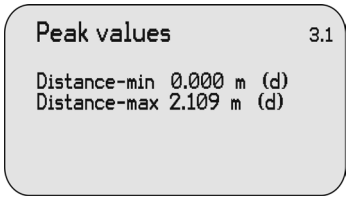


☞ ↻ Select programming menu
☞ OK Confirm selection

Note-The menu item number is displayed on the top right corner.

9.1 Peak values (3.1)

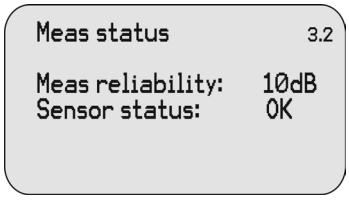
In this menu are recorded the min. and max. distance values. They can be cleared to zero in menu **4.3**.
Press ↻ to enter the next menu **3.2**.



☞ ↻ Go to next menu **3.2**

9.2 Measuremerent status (3.2)

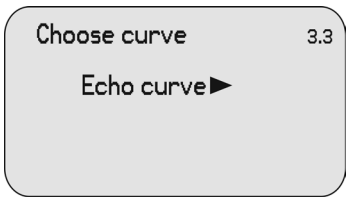
The display shows the level of the receiving signal and the general status of the sensor. Press ↻ to enter menu **3.3.**



☞ ↻ Go to next menu **3.3**

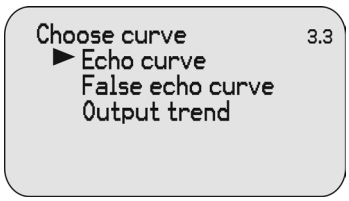
9.3 Choose curve (3.3)

Press OK to enter curve selection and press ↻ to enter menu **3.4.**



☞ OK Enter editing menu
☞ ↻ Go to next menu **3.4**

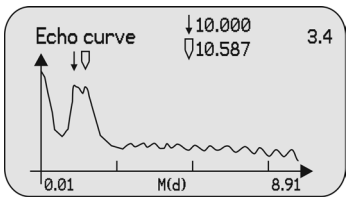
Press ↻ to select the curve and press OK to confirm and to enter menu **3.4**.



☞ ↻ Select curve
☞ OK Confirm and go to next menu **3.4**

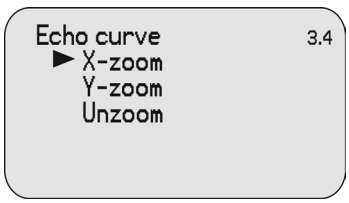
9.4 Echo curve (3.4)

Press OK to enter zoom submenu of the selected curve. Press ↻ to enter the next menu **3.5**.
The 2 echo curve indicators show:
↓- actual measure
▽- estimated measure
In normal operating conditions the indicators coincide in position and measure.



☞ OK Enter Zoom sub-menu
☞ ↻ Go to next menu **3.5**

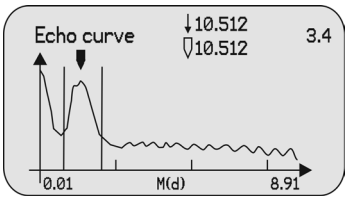
Press ↻ to select the zoom mode and press OK to confirm. The display will then show the curve.



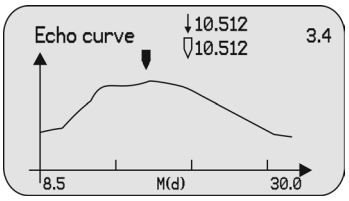
☞ ↻ Sel. zoom mode
☞ OK Confirm and see the curve

In case of "**X-zoom**" selection, you must proceed in the following way:

- press ↑ to move right the first line (opening line) of the zoom window
- press OK to confirm the position and to edit the second opening line
- press ↑ to move right the second line (closing line) of the zoom window
- press OK to confirm the position and to visualize the zoom window of the curve



↑ Move the first zoom line
OK Confirm first line position
↑ Move the second zoon line
OK Confirm second line position and see the zoom window



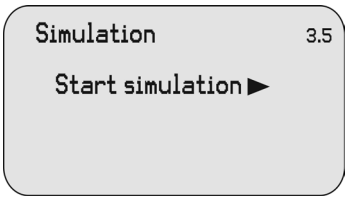
OK Go to submenu Zoom
BK Go back to menu **3.4**
↻ Go to next menu **3.5**

9.5 Simulation (3.5)

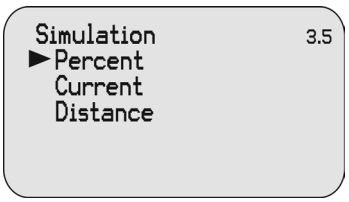
The "**Simulation**" menu is used to simulate the 4-20mA current output. There are three options:

- **Percent:** the output current is defined as a percent value (0% correspond to 4mA and 100% to 20mA)
- **Current:** the output current is defined as a current value
- **Distance:** the output current is defined by a distance value, in relation to Min adjustment (**1.1**), Max adjustment (**1.2**) and Mapping (**1.6**).

Press OK to select simulation mode, press ↻ to go back to menu **3.1**.



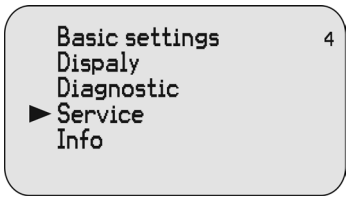
OK Enter the editing menu
↻ Go back to menu **3.1**



↻ Select simulation mode
OK Confirm

10. Service (4)

From"**RUN**" mode press OK to enter the configuration menu. The following menu will be displayed (**1**).
Press ↻ to selct the item and press OK to confirm the selection. The menu item number is always displayed on the top right corner. By selecting and confirming "**Service**" in menu **4**, the display will show in sequence:

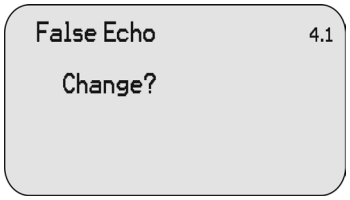


☞ ↻ Select programming menu
☞ OK Confirm selection

Note - The menu item number is displayed on the top right corner.

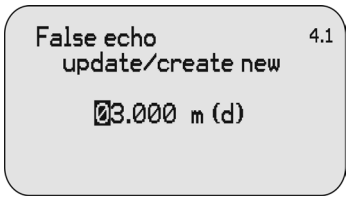
10.1 False echo (4.1)

This function gets rid of interferring signals caused by obstacles placed between the sensor and the product surface (i.e. brackets, agitators or pipes). Press OK to enter the False echo storing/modifying mode, press ↻ to enter the next menu **4.2**. Press ↻ to select the function, then press OK to confirm and to enter the next sub-menu in case of "**Update/Create new**". The **0%** level condition is the best way to record the False echo curve. In this way the system will monitor the whole path of the radar wave, intercepting all the obstacles that a product level > 0% would hide. Input the real actual distance that the system would measure. Note: Check the correct distance from the product surface. In case of higher wrong input, the exsisting level would be recorded as false signal. As a consequence, the filling level will not be detected. Press OK to set the parameter and to confirm. After the confirmation the system goes back to menu **4.1**.



☞ OK Enter editing menu
☞ ↻ Go to next menu **4.2**

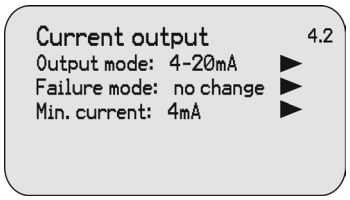
☞ ↻ Select function
☞ OK Confirm selection and go to next sub-menu in case of **update/create new**



☞ ↻ Select the digit
☞ ↑ Modify the value
☞ OK Confirm modification and start the recording false echo procedure

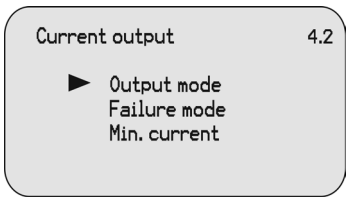
10.2 Current output (4.2)

Press OK to enter current output sub-menu, press ↻ to enter the next menu **4.3**



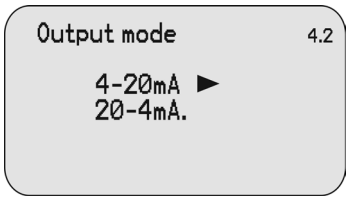
☞ OK Enter editing menu
☞ ↻ Go to next menu **4.3**

Press ↻ to select the current output function, press OK to confirm and enter the selected item, in sequence:



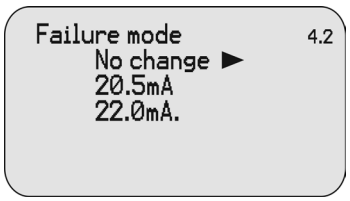
☞ ↻ Select mode
☞ OK Confirm and go to submenu

- **Output mode**; direct (4÷20mA) or indirect (20÷4mA) output.
  Press ↻ to select the current output and then press OK to confirm and to go back to sub-menu **4.2**



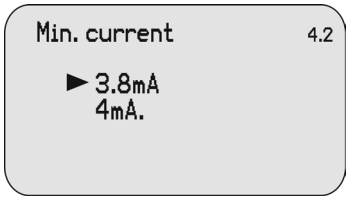
☞ ↻ Selelect parameter
☞ OK Confirm and go back to menu **4.2**

- **Failure mode**; output signal forcing in case of system failure (no change/, 20.5mA or 22.0mA)
  Press ↻ to select the parameter and press OK to confirm and to go back to sub-menu **4.2**



☞ ↻ Select parameter
☞ OK Confirm and go back to menu **4.2**

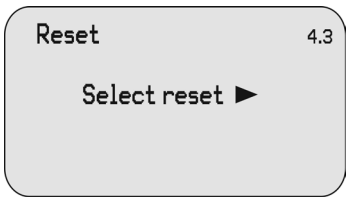
- **Min. current**; min.value of the signal (3.8mA or 4mA). Press ↻ to select the value and press OK to confirm and to go back to sub-menu **4.2**



↻ Select parameter
OK Confirm and go back to menu **4.2**

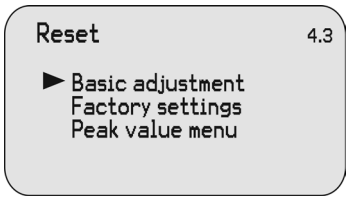
10.3 Reset (4.3)

Press OK to enter reset sub-menu, press ↻ to enter the next menu **4.4**



OK Enter editing menu
↻ Go to next menu **4.4**

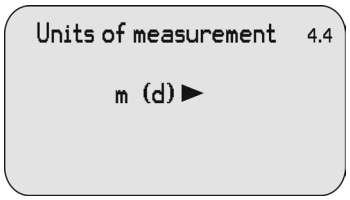
Press ↻ to select the resetting parameters and press OK to confirm. The system is now reconfigured with default values.



↻ Select parameter
OK Confirm and reset

10.4 Units of measurement (4.4)

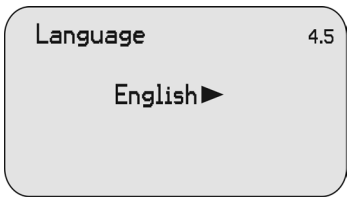
Press OK to enter the units of measurement menu: metric system (m) or British system (ft). Press to enter the next menu **4.5**.



OK Enter editing menu
↻ Go to next menu **4.5**

10.5 Language (4.5)

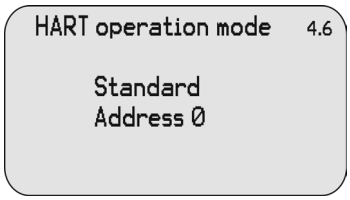
Press OK to enter the language selection menu: Italian or English. Press ↻ to enter the next menu **4.6**.



OK Enter editing menu
↻ Go to next menu **4.6**

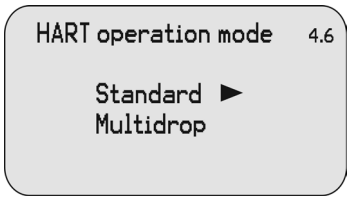
1.6 HART operation mode (4.6)

Press OK to enter the **HART** operation mode: standard or multidrop. Press ↻ to enter the next menu **4.7**.



OK Enter editing menu
↻ Go to next menu **4.7**

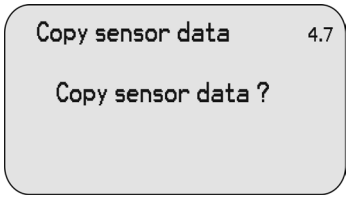
Press ↻ to select **HART** communication mode: "**Standard**" (address 0) or "**Multidrop**" (you must input the address. On the same line there cannot be 2 or more units with the same address). Press OK to confirm: the system is now reconfigured with default values.



↻ Select parameter
OK Confirm and reset

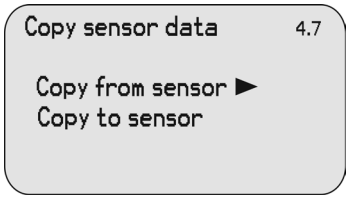
10.7 Copy sensor data (4.7)

Press OK to enter the copy sensor data menu: copy from sensor or copy to sensor. Press ↻ to enter the next menu **4.8**



OK Enter editing menu
↻ Go to next menu **4.8**

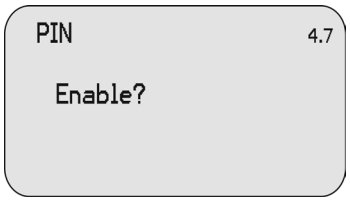
Press ↻ to select the operation: with "**Copy from sensor**", it is possible to save the sensor settings; with "**Copy to sensor**", all the previously saved sensor settings are restored. Press OK to confirm: the system is now reconfigured with default values.



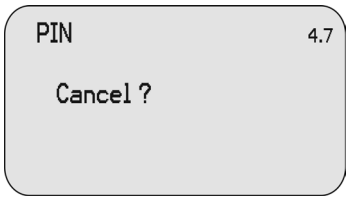
↻ Select option
OK Confirm

10.8 PIN (4.8)

Press OK to enter PIN sub-menu: if the PIN is inactive the option will be "**Enable?**". Press OK to enter a 4 digit PIN code. If the PIN is active the option will be "**Cancel?**". Press ↻ to go back to menu **4.1**



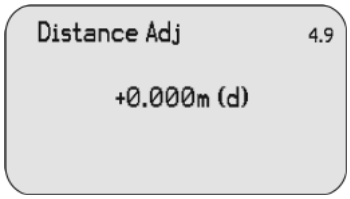
OK Enter editing menu
↻ Go back to menu **4.1**



OK Enter editing menu
↻ Go back to menu **4.1**

10.9 Distance Adj (4.9)

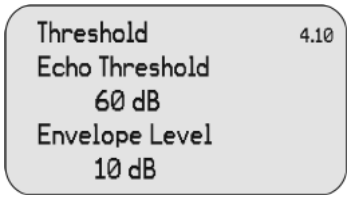
Pressing OK to access the distance adjustment.
Press ↻ to go back to next menu.



OK Enter editing menu
↻ Select the value
↑ Modify the value
OK Confirm
↻ Go to next menu

10.10 Threshold (4.10)

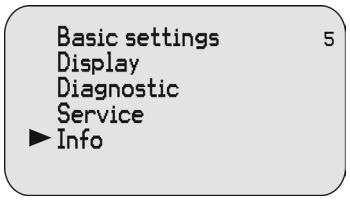
With a low echo signal may be necessary to reduce the echo acquisition threshold (Echo Threshold).
With a strong background noise may have to move higher up the echo curve zero line (Envelope Level).
Press OK to modify the Echo Threshold value. Press OK again to confirm and to edit the Envelope Level value.
After the setup press OK to confirm.
Press ↻ to enter next menu.



OK Enter editing menu
↻ Select the value
↑ Modify the value
OK Confirm
↻ Go to next menu

11. Info (5)

From "**RUN**" mode press OK to enter the configuration menu. The following menu will be displayed (**1**).
Press ↻ to select the item and OK to confirm.
The menu item number is always displayed on the top right corner.
By selecting and confirming "**Info**" in menu **5**, the display will show in sequence:

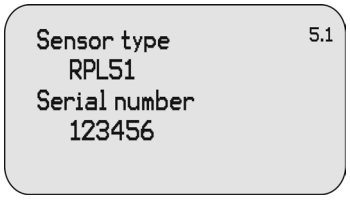


↻ Select programming menu
OK Confirm selection

Note - The menu item number is always displayed on the top right corner.

11.1 Sensor type / Serial number (5.1)

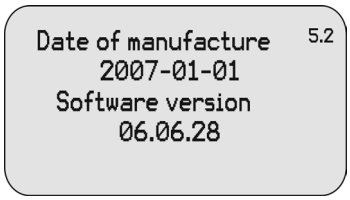
Press ↻ to go to next menu **5.2**.



Go to next menu **5.2**

11.2 Date of manuf./ Software version (5.2)

Press ↻ to go back to menu **5.1**



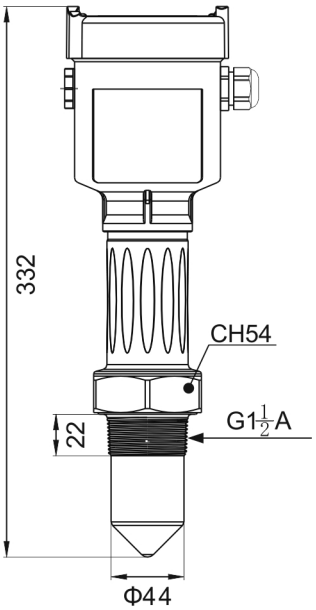
Go back to menu **5.1**

12. Mechanical dimensions

12.1 Dimensions

RPL55

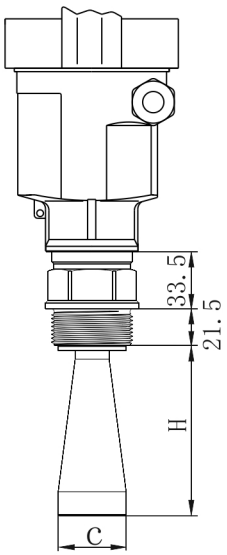
Fig.25



RPL56

Fig.26

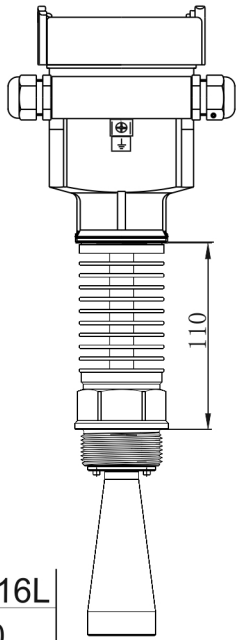
GB



c	H 316L
(B) Φ 48	140
(C) Φ 78	227
(H) Φ 98	288

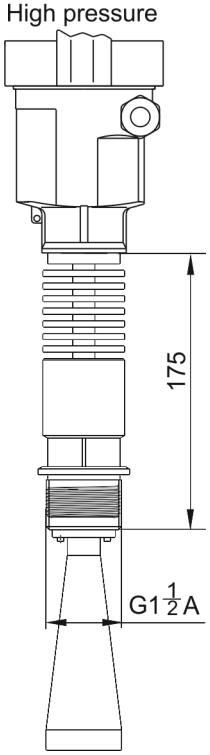
GC

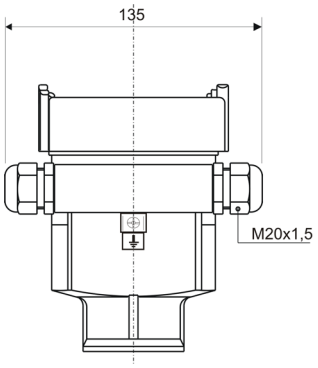
High temp

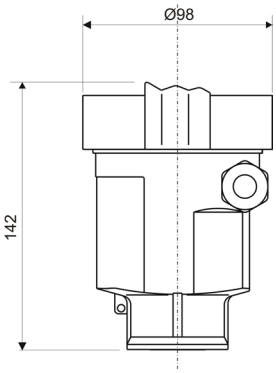


GD

High temp
High pressure







Connection head

Fig.24

RPL57

Fig.25

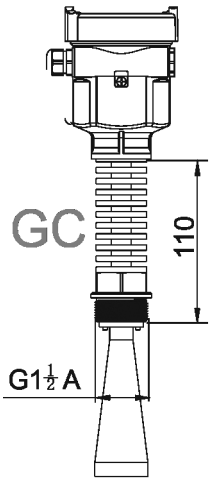
	a	b	c
DN50 PN16	Φ 165	Φ125	Φ99
DN80 PN16	Φ200	Φ160	Φ132
DN100 PN16	Φ220	Φ180	Φ156

RPL58/9

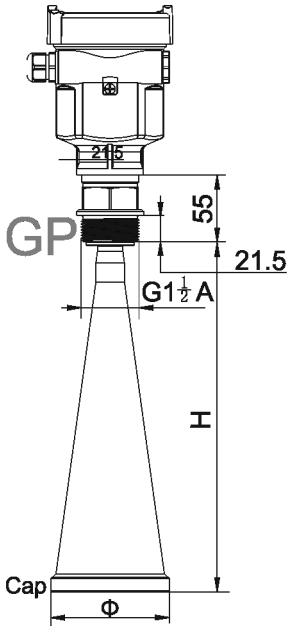
Threaded version

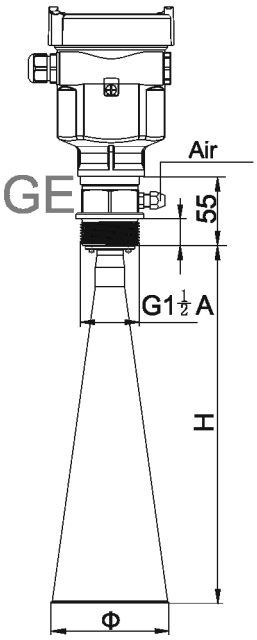
(for the mec. dimensions see tab.1 e tab.2)

Fig.27



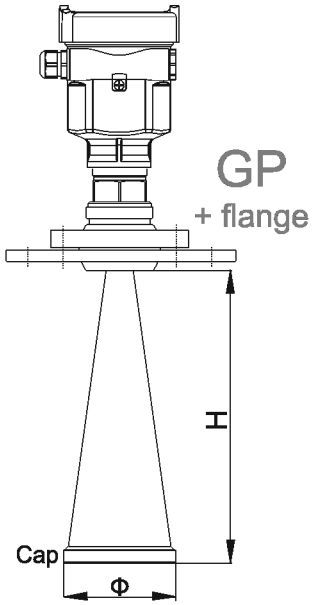
High temp

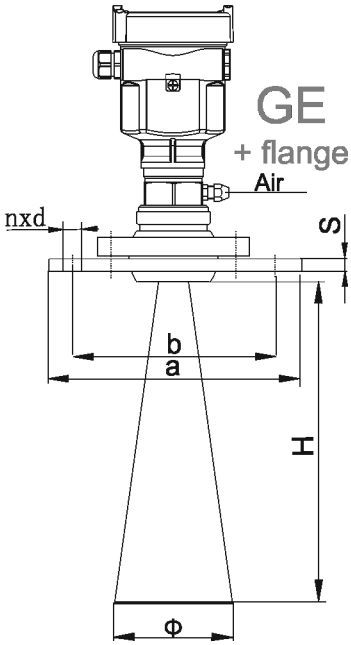




RPL58/9

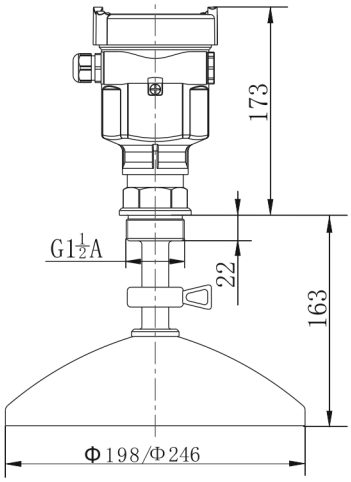
Flanged version
with gimbal
(for the mec. dimension see tab.1 e tab.2)
Fig.28

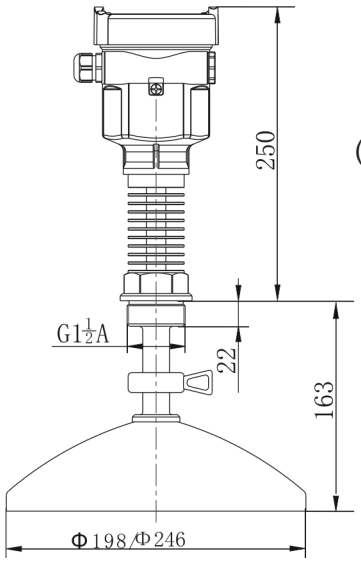




Tab.1
Horn dimensions

(Cod.)ΦAnt.	H	An.Mat.
(B) Φ48	140	SST316
(C) Φ78	227	SST316
(H) Φ98	288	SST316
(J) Φ123	620	SST316
(M) Φ98 + Cap	300	SST316
(P) Φ123 + Cap	625	SST316





RPL58/9

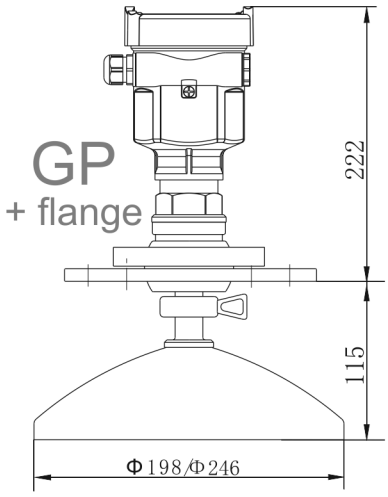
Threaded version
(for the mec. dimension see tab.2)
Fig.29

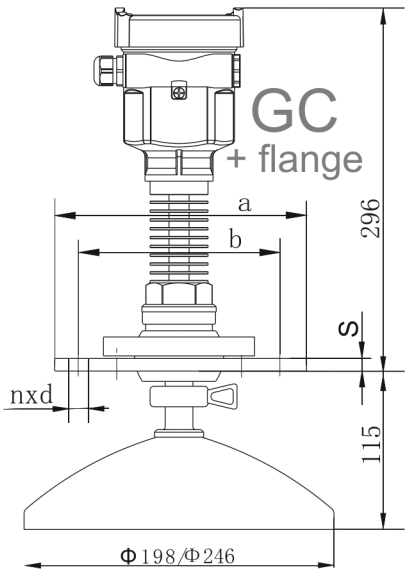
RPL58/9

Flanged version
with gimbal
(for the mec. dimension see tab.2)
Fig.30

Tab.2
Flange dimensions

	a	b	S	d
DN 50/2″	165mm	125mm	11.5mm	4xΦ18mm
DN 80/3″	200mm	160mm	11.5mm	4xΦ18mm
DN 100/4″	220mm	180mm	11.5mm	8xΦ18mm
DN 125/5″	250mm	210mm	11.5mm	8xΦ18mm
DN 150/6″	285mm	240mm	11.5mm	8xΦ22mm
DN 200/8″	340mm	295mm	11.5mm	12xΦ22mm
DN 250/10″	405mm	355mm	11.5mm	12xΦ26mm





RPL61

Fig.30

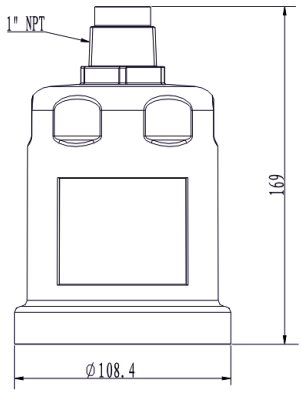


Fig.30.a

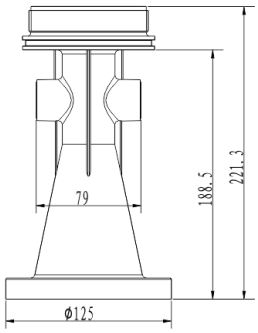


Fig.30.b

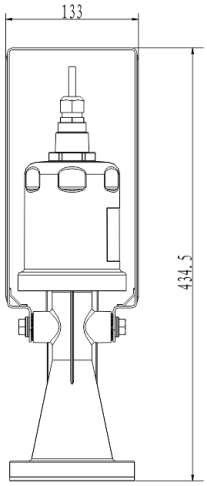


Fig.30.c

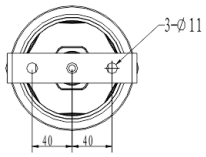


Fig.30.d

SGM-LEKTRA S.r.l. Via Papa Giovanni XXIII, 49 - 20090 Rodano (MI) - ITALY-
tel: ++39 0295328257 **fax:** ++39 0295328321
web: www.sgm-lektra.com **e-mail:** info@sgm-lektra.com